IN THE CLAIMS

1.   (Currently Amended) A method of extracting two-dimensional image shapes of submicron structures formed by photolithography on semiconductor wafers, from a two-dimensional array of pixel data, the method comprising the steps of:

identifying a preliminary, approximate edge of the image shape;

identifying a more precise edge of the image shape by

a) identifying a point along said approximate edge,

b) obtaining intensity vs. pixel information ~~in~~ along a plurality of scans extending in different directions, through substantially ~~the same~~ said point, in the vicinity of ~~an~~ the edge of the image shape;

c) recognizing scans with sufficient contrast as containing edge information;

d) subjecting the recognized scans to an edge detection algorithm;

d) detecting a point on the more precise edge location of the image by using said edge detection algorithm; and

~~generating~~ f) repeating steps b), c), d) and e) for different points along the approximate edge to generate a locus of points that define the two-dimensional shape of the image from the detected edge values.

2. (Original) A method according to Claim 1, wherein the edge detection algorithm is a user defined edge detection algorithm that is tailored to the application.

Claim 3 (Cancelled).

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4. (Previously Presented) A method according to Claim 1, wherein the obtaining step includes the step of obtaining intensity vs. pixel information in at least four directions.

5. (Previously Presented) A method according to Claim 1, wherein one of said directions is normal to the approximate edge location.

6. (Currently Amended) Apparatus for extracting two-dimensional shape information from an image, of a submicron structure, formed on an array of detectors, comprising:

means for identifying a preliminary approximate edge of the image shape;

means for identifying a more precise edge on the image shape by

a) identifying a point along said approximate edge,

b) means for obtaining intensity vs. detector location information for detectors on a plurality of scans in a plurality of angularly different directions, through substantially the same said point, in the vicinity of an the edge of the image;

c) means for identifying scans having sufficient pixel contrast to provide edge information;

d) means for processing identified scans according to an edge detection algorithm to identify points a point on the more precise edge of the image; and

means for generating f) repeating functions b), c), d) and e) for different points along the approximate edge to generate a locus of points that define the two-dimensional shape of the structure from the identified edge points.

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7. (Original) Apparatus according to Claim 6, wherein the edge detection algorithm is a user defined edge detection algorithm that is tailored to the application.

Claim 8 (Cancelled).

9. (Previously Presented) Apparatus according to Claim 6, wherein the plurality of directions includes at least four directions.

10. (Previously Presented) Apparatus according to Claim 6, wherein one of said directions is normal to an approximate edge location.

11. (Currently Amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for extracting two-dimensional image shapes of submicron structures formed by photolithography on semiconductor wafers, from image data on a pixel array, the method steps comprising:

identifying a preliminary, approximate edge of the image shape;

identifying a more precise edge of the image shape by

a) identifying a point along said approximate edge,

b) obtaining intensity vs. pixel information along a plurality of scans extending in different directions, through substantially the same said point, in the vicinity of an the edge of the image shape;

c) recognizing scans with sufficient contrast as containing edge information;

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d) subjecting the recognized scans to an edge detection algorithm;

e) detecting a point on the more precise edge location of the image by using said edge detection algorithm; and

~~generating~~ f) repeating steps b), c), d) and e) for different points along the approximate edge to generate a locus of points that define the two-dimensional shape of the image from the detected edge values.

12. (Original) A program storage device according to Claim 11, wherein the edge detection algorithm is a user defined edge detection algorithm that is tailored to the application.

Claim 13 (Cancelled).

14. (Previously Presented) A program storage device according to Claim 11, wherein the obtaining step includes the step of obtaining intensity vs. pixel information in at least four directions.

15. (Original) A program storage device according to Claim 11, wherein one of the directions is normal to an approximate edge location.

16. (Previously Presented) A method according to Claim 1, wherein the plurality of directions are angularly spaced apart about 22½ degrees.

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17. (Previously Presented) A method according to Claim 1, wherein the plurality of directions are angularly spaced apart about 45 degrees.

18. (Previously Presented) Apparatus according to Claim 6, wherein the plurality of directions are angularly spaced apart about 22 ½ degrees.

19. (Previously Presented) Apparatus according to Claim 6, wherein the plurality of directions are angularly spaced apart about 45 degrees.

20. (Previously Presented) A program storage device according to Claim 11, wherein the plurality of directions are angularly spaced apart about 22 ½ degrees.

21. (Previously Presented) A program storage device according to Claim 11, wherein the plurality of directions are angularly spaced apart about 45 degrees.

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